

### ABSTRACT OF THE DISCLOSURE

An improved mechanism for analysing connection establishment/teardown process or identifying failure points (i.e. nodes) in a PNNI network through the use of a novel debug IE (information element) that is propagated along the communication path for a given connection to activate diagnostic functions on targeted switching devices. The mechanism comprises a method that is initiated by embedding a debug information element (IE) in a data packet that is propagated to various switching devices (the nodes) along the communication path. The debug IE is encoded such that it will be recognized by selected switching devices along the path, but ignored by other non-selected switching devices. Further encoding identifies targeted switching devices that are suspected to be possible failure points to confirm that they are functioning properly. Upon receipt and extraction of the debug IE from the data packet, the targeted switching devices are instructed to automatically perform one or more analysis functions to verify their operation. The results of these tests are then forwarded to an operator of the targeted switching devices, such as a network operator or a vendor that supplies the targeted switching devices to the network.